

What is claimed is:

1. An adhesive composition, comprising:  
an atactic polymer having a degree of crystallinity of less than about 20% and a number-average molecular weight between about 1,000 and about 300,000; and  
an isotactic polymer having a degree of crystallinity of at least about 40% and a number-average molecular weight between about 3,000 and about 200,000.
2. The adhesive composition of Claim 1, wherein the degree of crystallinity of the atactic polymer is less than about 15%.
3. The adhesive composition of Claim 1, wherein the degree of crystallinity of the isotactic polymer is at least about 60%.
4. The adhesive composition of Claim 1, wherein the degree of crystallinity of the isotactic polymer is at least about 80%.
5. The adhesive composition of Claim 1, wherein the isotactic polymer is at least 60% isotactic.

6. The adhesive composition of Claim 1, wherein the isotactic polymer is at least 70% isotactic.

7. The adhesive composition of Claim 1, wherein the isotactic polymer is at least 80% isotactic.

8. The adhesive composition of Claim 1, wherein the number-average molecular weight of the atactic polymer is between about 3,000 and about 100,000.

9. The adhesive composition of Claim 1, wherein the number-average molecular weight of the isotactic polymer is between about 10,000 and about 100,000.

10. The adhesive composition of Claim 1, wherein the adhesive composition is hot-melt processable at less than about 450 degrees Fahrenheit.

11. The adhesive composition of Claim 1, wherein the adhesive composition is hot-melt processable at less than about 400 degrees Fahrenheit.

12. The adhesive composition of Claim 1, wherein the adhesive composition is hot-melt processable at less than about 375 degrees Fahrenheit.

13. The adhesive composition of Claim 1, wherein the adhesive composition is hot-melt processable at less than about 350 degrees Fahrenheit.

14. The adhesive composition of Claim 1, wherein the adhesive composition has a melt index between about 100 and about 2000 grams per 10 minutes.

15. The adhesive composition of Claim 1, wherein the adhesive composition has a melt index between about 200 and about 1800 grams per 10 minutes.

16. The adhesive composition of Claim 1, wherein the adhesive composition has a melt index between about 500 and about 1500 grams per 10 minutes.

17. The adhesive composition of Claim 1, comprising between about 50 and about 90 weight percent of the atactic polymer, and between about 5 and about 50 weight percent of the isotactic polymer.

18. The adhesive composition of Claim 1, wherein the atactic polymer comprises atactic polypropylene.

19. The adhesive composition of Claim 1, wherein the atactic polymer is selected from the group consisting of: low density polyethylene, atactic polystyrene, atactic polybutene, amorphous polyolefin copolymer, and combinations thereof.

20. The adhesive composition of Claim 19, wherein the low density polyethylene has a density in a range of 0.910 to 0.935 grams per cubic centimeter.

21. The adhesive composition of Claim 1, wherein the isotactic polymer comprises isotactic polypropylene.

22. The adhesive composition of Claim 1, wherein the isotactic polymer is selected from the group consisting of: high density polyethylene, isotactic polystyrene, isotactic polybutene, and combinations thereof.

23. The adhesive composition of Claim 22, wherein the high density polyethylene has a density in a range of 0.935 to 0.980 grams per cubic centimeter.

24. A laminated structure comprising at least a portion of a first layer attached to at least a portion of a second layer using the adhesive composition of Claim 1.

25. The laminated structure of Claim 24, wherein the laminated structure has a static-peel-failure time of at least about 1 hour.

26. The laminated structure of Claim 24, wherein the laminated structure has a static-peel-failure time of at least about 8 hours.

27. The laminated structure of Claim 24, wherein the laminated structure has a static-peel-failure time of at least about 24 hours.

28. The laminated structure of Claim 24, wherein the laminated structure has a relative accretion value of less than 1.

29. The laminated structure of Claim 24, wherein the laminated structure has a relative accretion value of less than 0.5.

30. The laminated structure of Claim 24, wherein the laminated structure has a relative accretion value of less than 0.2.

31. The laminated structure of Claim 24, wherein the first and second layers are each part of a single substrate.

32. The laminated structure of Claim 24, wherein each of the first and second layers is selected from the group consisting of: nonwoven material, woven material, film, and an elasticized component.

33. The laminated structure of Claim 24, wherein at least one of the first and second layers comprises at least one of the group consisting of cellulosic material, thermoplastic material, and combinations thereof.

34. An absorbent article comprising the laminated structure of Claim 24.

35. The adhesive composition of Claim 1, further comprising up to 50% by weight of a combination of additives selected from the group consisting of: a tackifier, an antioxidizing agent, color pigment, filler, and a polymer compatibilizer, wherein the adhesive composition has an open time of up to 2 minutes.

36. The adhesive composition of Claim 35, wherein the adhesive composition has an open time of up to 30 seconds.

37. The adhesive composition of Claim 35, wherein the adhesive composition has an open time of up to 10 seconds.

38. The adhesive composition of Claim 35, wherein the adhesive composition has an open time of up to 1 second.

39. An absorbent article comprising the adhesive composition of Claim 1.

40. An adhesive composition, comprising:  
at least 50% and less than 80% by weight of an atactic polymer having a degree of crystallinity of less than about 20% and a number-average molecular weight of at least 3,000 and less than 100,000; and  
between about 5% and about 40% by weight of an isotactic polymer having a degree of crystallinity of at least about 40%.

41. The adhesive composition of Claim 40, wherein the degree of crystallinity of the atactic polymer is less than about 15%.

42. The adhesive composition of Claim 40, wherein the degree of crystallinity of the isotactic polymer is at least about 60%.

43. The adhesive composition of Claim 40, wherein the degree of crystallinity of the isotactic polymer is at least about 80%.

44. The adhesive composition of Claim 40, wherein the isotactic polymer is at least 60% isotactic.

45. The adhesive composition of Claim 40, wherein the isotactic polymer is at least 70% isotactic.

46. The adhesive composition of Claim 40, wherein the isotactic polymer is at least 80% isotactic.

47. The adhesive composition of Claim 40, wherein the number-average molecular weight of the isotactic polymer is between about 3,000 and about 200,000.

48. The adhesive composition of Claim 40, wherein the number-average molecular weight of the isotactic polymer is between about 10,000 and about 100,000.

49. The adhesive composition of Claim 40, wherein the adhesive composition has a melt index between about 100 and about 2000 grams per 10 minutes.



50. The adhesive composition of Claim 40, wherein the adhesive composition has a melt index between about 200 and about 1800 grams per 10 minutes.

51. The adhesive composition of Claim 40, wherein the adhesive composition has a melt index between about 500 and about 1500 grams per 10 minutes.

52. The adhesive composition of Claim 40, wherein the atactic polymer comprises atactic polypropylene.

53. The adhesive composition of Claim 40, wherein the atactic polymer is selected from the group consisting of: low density polyethylene, atactic polystyrene, atactic polybutene, amorphous polyolefin copolymer, and combinations thereof.

54. The adhesive composition of Claim 53, wherein the low density polyethylene has a density in a range of 0.910 to 0.935 grams per cubic centimeter.

55. The adhesive composition of Claim 40, wherein the isotactic polymer comprises isotactic polypropylene.

56. The adhesive composition of Claim 40, wherein the isotactic polymer is selected from the group consisting of: high density polyethylene, isotactic polystyrene, isotactic polybutene, and combinations thereof.

57. The adhesive composition of Claim 56, wherein the high density polyethylene has a density in a range of 0.935 to 0.980 grams per cubic centimeter.

58. A method of making an adhesive composition, comprising the steps of:

providing an atactic polymer having a degree of crystallinity of less than about 20% and a number-average molecular weight between about 1000 and about 300,000;

providing an isotactic polymer having a degree of crystallinity of at least about 40% and a number-average molecular weight between about 3000 and about 200,000;

heating the atactic polymer and the isotactic polymer until the atactic polymer and the isotactic polymer are liquified;

blending the heated atactic polymer and the heated isotactic polymer to form an adhesive composition that is melt-processable at a temperature of less than about 450 degrees Fahrenheit.

59. The method of Claim 58, wherein the atactic polymer comprises atactic polypropylene.

60. The method of Claim 58, wherein the atactic polymer is selected from the group consisting of: low density polyethylene, atactic polystyrene, atactic polybutene, amorphous polyolefin copolymer, and combinations thereof.

61. The method of Claim 60, wherein the low density polyethylene has a density in a range of 0.910 to 0.935 grams per cubic centimeter.

62. The method of Claim 58, wherein the isotactic polymer comprises isotactic polypropylene.

63. The method of Claim 58, wherein the isotactic polymer is selected from the group consisting of: high density polyethylene, isotactic polystyrene, isotactic polybutene, and combinations thereof.

64. The method of Claim 63, wherein the high density polyethylene has a density in a range of 0.935 to 0.980 grams per cubic centimeter.

65. The method of Claim 58, wherein the adhesive composition comprises between about 50 and about 90 weight percent of the atactic polymer, and between about 5 and about 50 weight percent of the isotactic polymer.

66. The method of Claim 58, further comprising the steps of:

providing a first substrate;

providing a second substrate;

applying the adhesive composition to at least one of the first substrate and the second substrate; and

joining at least a portion of the first substrate to at least a portion of the second substrate with at least a portion of the applied adhesive composition positioned between the first substrate and second substrate.

67. The method of Claim 66, wherein the first and second substrates are each part of a single substrate.

68. The method of Claim 66, wherein each of the first and second substrates is selected from the group consisting of: nonwoven material, woven material, film, and an elasticized component.

69. The method of Claim 66, wherein at least one of the first and second substrates comprises at least one of the group consisting of cellulosic material, thermoplastic material, and combinations thereof.

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